AMENDMENTS TO THE SPECIFICATION

Amend paragraphs [0026] and [0028] as follows:

[0026] Then a second implant is carried out to form regions 24. These regions provide the hyperabrupt profile required for high performance varactors. The dopant can be phosphorous, arsenic, or antimony, at a dose of between approximately ~~1x1011 to 1x1014 atoms/cm2~~ $\underline{1\text{x}10^{11}\text{ to }1\text{x}10^{14}\text{ atoms/cm}^2}$ and at an energy between approximately 10-40Kev, most preferably a concentration of approximately ~~1x1011~~ $\underline{1\text{x}10^{11}\text{ atoms/cm}^2}$ and an energy of 170Kev for implanted Sb. Note that the resulting diffusion regions extend beneath the mask structures 16A, toward one another but separated by a portion of n-well 12V. This is important because the region under the gate is usually the lowest doped portion of the well. Because it is low doped, it readily depletes under reverse bias so that the tuning range is increased. However, both sides are depleting (under 16A), and if the depletion regions touch then the capacitance will be pinned (truncating the tuning range). In practice, this profile is preferably achieved by angling the implant to be between approximately 7 and 60 degree with respect to the plane of the substrate. This profile could also be achieved by carrying out a sequence of vertical implants at varying doses and energies, or by combining vertical and angled implants. This implant beneath the mask structures 16A maximizes tunability by maximizing the area of the final implant regions that remain after the counterdoping process, described below, which forms the P+ part of the p-n junction varactor (that is, prior to the implant step described below, regions 24 laterally extend to adjacent side surfaces of the isolation regions 14). At the same time, the lateral nature of this implant minimizes distortion of the desired hyperabrupt doping profile, which maximizes both linearity and Q. Thus, a high Q is achieved using the high-energy implant without sacrificing tunability.

[0028] Then, a third implant is then carried out to form regions 26. The dopant can be boron, at a dose between approximately ~~1x1014 and 8x1015 atoms/cm2 (preferably 2-5x1015)~~ $1x10^{14}$ and $8x10^{15}$ atoms/cm^2 (preferably 2-$5x10^{15}$ atoms/cm^2) and an energy between 1-15keV. Preferably, this implant step is carried out by first removing mask PRM shown in Fig. 2 and defining a new mask through which regions 26 are formed in the varactor portion of substrate 10 and are also formed in regions T to provide the source/drain electrodes of the FET (such a mask would leave the substrate contact area unexposed, so that the substrate contact area only receives implants 12A and 24). Alternatively, this step can be a dedicated implant through a dedicated mask, with the source/drain regions being formed through a separate mask. In the varactor region this implant minimizes the total series resistance of the device. Note that as opposed to the previous implant, regions 26 are preferably formed by use of a conventional, directional implant process that counterdopes portions of regions 24 exposed by mask 16A. Note that regions 26 extend from the exposed side of an adjacent isolation region 14 to the applicable side of the mask 16A.